

Claims:

1. A process for controlling the contour of a transition area of a feature made by etching a substrate comprising

5 applying a patterned resist mask to the substrate to form a plurality of mask openings and mask land areas having mask land areas which are sized and spaced to control the contour of a transition area of the feature wherein the size and spacing of the land areas provide an etch depth in the substrate at the transition area that is less than an etch depth at an adjacent etched or partially etched area of the substrate and  
10 etching the substrate to provide a contoured feature.

2. The process of claim 1 wherein the width and spacing of mask land areas provide a slower etch rate than an etch rate at an adjacent etched or partially etched area of the substrate.

3. The process of claim 1 wherein the mask land areas are circular, elliptical, square, rectangular, triangular, hexagonal, pentagonal, trapezoidal or a combination of such shapes.

4. The process of claim 3 wherein the mask land areas are circles having diameters in the range from about 10 to 100 microns.

5. The process of claim 4 wherein the circular land areas have diameters in the range from about 55 to 70 microns.

6. The process of claim 4 wherein the circular land areas have diameters in the range from about 20 to 30 microns.

7. The process of claim 4 wherein the edges of the circular land areas are spaced at a distance in the range from about 10 to 50 microns.

8. A process for controlling a cross section or topography of a transition area of an etched feature in a substrate comprising

5 applying a resist mask to portions of the substrate to form one or more masked openings and a plurality of masked land areas, wherein one or more of the size, shape, and spacing of the land areas are selected to control a contour of the transition area of the etched feature.

9. The process of claim 8 wherein the transition area comprises a fillet radius.

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10. The process of claim 8 wherein the transition area comprises a corner.

11. The process of claim 8 wherein the transition area comprises a slope.

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12. The process of claim 8 wherein the transition area comprises a rounded edge.

13. A single step partial etching process to provide a feature on the substrate comprising the steps of

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applying a resist mask to selected portions of the substrate, and  
patterning a mask area of a predetermined planar size and shape at a transition area of the substrate to form one or more mask open areas and one or more mask land areas, wherein the size, shape, and spacing of the one or more mask land areas and the size, shape, and spacing of the one or more mask open areas reduce corner rounding of a feature at the transition area.

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14. A single step, partial etching process for etching a thin substrate comprising etching a masked substrate having open areas and resist land areas of sizes and spacings selected to reduce the relative etch rate at a transition area of an etched feature.

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15. The process of claim 14 wherein the substrate comprises copper, steel, or constantan.

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